

What is claimed is:

1. A spray bar for spraying liquids comprising:
a header block,
5 a plurality of liquid spray nozzles mounted on said header block,
said header block including a plurality of separate plates,
said plates being secured together with faces of
10 adjacent plates in interfacing relation to each other;
and
at least one of said faces being formed with a groove which together with an adjacent plate defines a supply liquid passage for communicating liquid from a
15 supply liquid inlet to at least one of said nozzles for discharge from said at least one nozzle as a liquid spray.
2. The spray bar of claim 1 in which said adjacent faces are flat.
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3. The spray bar of claim 1 in which said groove has a U-shape.
- 25 4. The spray bar of claim 1 in which said nozzles are air atomizing nozzles, at least one of said faces being formed with a groove which together with an adjacent plate defines an atomizing air passage for directing pressurized air from a pressurized air inlet to
30 said at least one nozzle for atomizing liquid directed to said at least one nozzle from said liquid supply passage.
- 35 5. The spray bar of claim 1 in which said nozzles each have a respective fluid operated actuator for controlling the discharge of liquid from the nozzle, and at least one of said faces is formed with a groove which together with an adjacent plate defines an actuating

fluid passage for communicating pressurized fluid from a pressurized fluid inlet to the actuator for said at least one nozzle for operating the actuator and controlling the liquid discharge from said at least one nozzle.

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6. The spray bar of claim 1 in which at least one of said faces being formed with a groove which with an adjacent plate defines a heating fluid passage for communicating a heating fluid from a heating fluid supply through the header to heat the header and liquid communicating through said supply liquid passage.

7. The spray bar of claim 4 in which said supply liquid passage communicates with a plurality of said nozzles, and said actuation air passage communicates with a plurality of said nozzle actuators.

8. The spray bar of claim 7 in which said nozzles are mounted in a row in side-by-side relation to each other.

9. The spray bar of claim 7 in which at least one of said faces is formed with a second groove which together with an adjacent plate defines a first actuating air passage for directing pressurized air from a pressurized air source to a first plurality of actuators for simultaneously controlling operation of a first plurality of nozzles, and at least one of said faces being formed with a third groove which together with an adjacent plate defines a second actuating air passage for communicating pressurized air from a pressurized air source to a second plurality of actuators different from said first plurality of actuators for simultaneously controlling operation of a second plurality of nozzles different from said first plurality of nozzles.

10. The spray bar of claim 9 in which said second and third grooves are formed on a common face on opposite sides of said actuator.

5 11. The spray bar of claim 1 in which interfacing surfaces of two of said plates are formed with juxtaposed grooves which are separated by a gasket interposed therebetween, said gasket having an aperture adjacent an end and communicating between said juxtaposed grooves,
10 one of said juxtaposed grooves and said gasket defining a heating fluid passage communicating between a heating fluid inlet and said gasket aperture, and another of said juxtaposed grooves and said gasket defining a return heating fluid passage communicating between said gasket
15 aperture and a heating fluid outlet.

12. The spray bar of claim 9 in which said first plurality of nozzles define a first selectively controllable spray zone, and said second plurality of spray nozzles defines a second selectively controlled spray zone.
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13. The spray bar of claim 12 in which said nozzles are mounted in a straight line, and said first spray zone includes at least one nozzle at each end of said line of nozzles, and said second spray zone includes nozzles between the nozzles of said first zone.
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14. The spray bar of claim 4 in which said header includes three plates, at one of the adjacent faces of first and second of said plate defining said supply liquid passage, and at least one of the adjacent faces of said second and third plates defining said actuating air passage.
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15. The spray bar of claim 5 in which one of said plates is defined with a plurality of apertures which

each receive a respective one of said nozzles, and another of said plates is formed with a plurality of said apertures in coaxial alignment with the apertures of said first plate for receiving respective nozzle actuators.

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16. The spray bar of claim 4 in which said nozzles each have a respective fluid operated actuator for controlling the discharge of liquid from the nozzle, and at least one of said faces is formed with a groove which together with an adjacent plate defines an actuating fluid passage for communicating pressurized fluid from a pressurized fluid inlet to the actuator for said at least one nozzle for operating the actuator and controlling the liquid discharge from said at least one nozzle.

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17. The spray bar of claim 16 in which said supply liquid and atomizing air passages are formed by grooves between interfacing first and second of said plates, and said actuating air passages are formed by a groove interfaced between second and third of said plates.

18. The spray bar of claim 1 in which said supply liquid passage has a narrowing cross-sectional area in a downstream direction such that liquid is supplied to each nozzle at a substantially uniform pressure.

19. The spray bar of claim 18 in which said supply liquid passage defining groove is U-shaped, and a bottom surface of said U-shaped groove being tapered to constrict the area of said groove in a downstream direction.

20. A spray bar for spraying liquids comprising:
a header block,
35 a plurality of liquid spray nozzles mounted in side-by-side relation on said header block,

said header block including a plurality of separate plates,

said plates being secured together with faces of adjacent plates in interfacing relation to each other;
5 and

at least one interface between adjacent plates defining a supply liquid passage for communicating liquid from a supply liquid inlet to a plurality of said nozzles for discharge from said plurality of nozzles as liquid
10 sprays.

21. The spray bar of claim 20 in which said nozzles are air atomizing nozzles, at least one of said faces being formed with a groove which together with an
15 adjacent plate defines an atomizing air passage for directing pressurized air from a pressurized air inlet to said plurality of nozzles for atomizing liquid directed to said plurality of nozzles from said liquid supply passage.

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22. The spray bar of claim 21 in which said nozzles each have a respective fluid operated actuator for controlling the discharge of liquid from the nozzle, and at least one of said faces is formed with a groove which together with an adjacent plate defines an actuating
25 fluid passage for communicating pressurized fluid from a pressurized fluid inlet to the actuators for said at least one nozzle of said plurality of nozzles for operating the actuator and controlling the liquid
30 discharge from said at least one nozzle.

23. The spray bar of claim 21 in which at least one of said faces being formed with a groove which with an adjacent plate defines a heating fluid passage for
35 communicating a heating fluid from a heating fluid supply through the header to heat the header and liquid communicating through said supply liquid passage.

24. The spray bar of claim 20 in which at least one of said faces is formed with a groove which together with an adjacent plate defines a first actuating air passage for directing pressurized air from a pressurized air source to a first plurality of actuators for simultaneously controlling operation of a first plurality of said nozzles, and at least one of said faces being formed with a groove which together with an adjacent plate defines a second actuating air passage for communicating pressurized air from a pressurized air source to a second plurality of actuators different from said first plurality of actuators for simultaneously controlling operation of a second plurality of nozzles different from said first plurality of nozzles.

25. The spray bar of claim 20 in which said header includes three plates, at one of the adjacent faces of first and second of said plate defining said supply liquid passage, and at least one of the adjacent faces between said second and third plates defining said actuating air passage.

26. The spray bar of claim 20 in which said supply liquid passage has a narrowing cross-sectional area in a downstream direction such that liquid is supplied to each nozzle at a substantially uniform pressure.

27. A method of making a spray bar for spraying a liquid comprising the steps of:
30 providing a plurality of plates,
forming nozzle-receiving apertures in at least one of said plates,
35 forming a first groove in a face of at least one of said plates,
assembling a spray nozzle in each of said nozzle-receiving apertures, and

assembling said plates in adjacent interfacing relation to each other such that the groove in said face of at least one plate and an interfacing adjacent plate define a supply liquid passage for communicating liquid 5 from a liquid supply inlet to said nozzles.

28. The method of claim 27 including forming said groove and nozzle-receiving apertures in a common plate with said groove communicating with each of said nozzle-receiving apertures. 10

29. The method of claim 28 including forming said groove in a straight line along a length of the face of said at least one plate.

15 30. The method of claim 27 including electroplating said plates including the groove and nozzle-receiving apertures formed therein.

20 31. The method of claim 27 including assembling air assisted spray nozzles in said plates, and forming a second groove in a face of at least one of said plates which together with an adjacent interfacing plate defines an atomizing air passage for communication between a 25 pressurized air inlet and said nozzles.

32. The method of claim 31 including forming said first groove in a face of one of said plates and forming said second groove in a face of another of said plates.

30 33. The method of claim 27 including forming a plurality of nozzle actuator receiving apertures in another of said plates corresponding in number to said nozzle-receiving apertures, assembling said plates with 35 respective nozzle-receiving apertures and actuator-receiving apertures in coaxial relation to each other, assembling nozzle actuators in each of said actuator-

receiving apertures, forming a second groove in a face of one of said plates which upon assembly of said plates defines within an adjacent interfacing plate an actuating fluid passage for communicating pressurized fluid from a 5 pressurized fluid inlet to at least some of said actuators.

34. The method of claim 27 including forming a plurality of nozzle actuator receiving apertures in another of said plates corresponding in number to said 10 nozzle-receiving apertures, assembling said plates with respective nozzle-receiving apertures and actuator-receiving apertures in coaxial relation to each other, assembling nozzle actuators in each of said actuator-receiving apertures, forming a second groove in a face of 15 at least one of said plates which upon assembly of said plates defines with an adjacent interfacing plate a first actuating fluid passage for communicating pressurized fluid from a pressurized fluid inlet to a first plurality of said actuators, and forming a third groove in a face of at least one of said plates which upon assembly of 20 said plates defines within an adjacent interfacing plate a second actuating fluid passage for communicating pressurized fluid from a pressurized fluid inlet to a second plurality of said actuators different from said 25 first plurality of actuators.

35. The method of claim 34 including forming said first and second grooves on a common face of one of said 30 plates on opposite sides of said actuator-receiving apertures.

36. The method of claim 34 including providing three plates, and forming said nozzle-receiving and 35 actuator-receiving apertures in respective coaxial relation through each of said three plates.

37. The method of claim 31 including forming a third groove in a face of one of said plates which upon assembly of said plates defines with an adjacent interfacing plate a heating fluid passage for
5 communicating a heating fluid from a heating fluid supply through said plates.

38. The method of claim 27 including forming said nozzle-receiving openings in a straight line, and forming
10 said first groove in a straight line along a side of said nozzle-receiving apertures.